

Metal Progress

VOLUME 69—JANUARY THROUGH JUNE, 1956

OWNED, PUBLISHED AND COPYRIGHTED BY THE

AMERICAN SOCIETY FOR METALS

7301 Euclid Avenue, Cleveland 3, Ohio

Subject Index

The subject headings used in this index are chosen in accordance with the ASM-SLA Metallurgical Literature Classification, published by the American Society for Metals, 1950.

Aircraft

- Effect of Temperature on Strength-Weight Ratio of Aircraft Materials, by George D. Cremer (ds).....6-80B

Aluminum

- Aluminum Versus Copper, by C. W. Nielsen (d).....4-136
Atmospheric Corrosion of Aluminum, by W. D. Clark (d).....4-136
Corrosion of Coated Steel in Contact With Al, by S. C. Britton and R. W. deV. Staepoole (d).....2-154
Decomposition of Metastable Structures by Plastic Deformation, by V. A. Pavlov (d).....2-160
Electrolytic Polishing of Aluminum, by P. A. Jacquet (d).....4-176
Extrusion of Aluminum Cable Sheath, by G. M. Bouton, J. H. Heiss and G. S. Phipps (d).....2-130
Fusion Welding of a High-Strength Aluminum Alloy, by J. B. Arthur (d).....4-164
Grain-Boundary Creep in Aluminum, by F. J. Rhines, W. E. Bond and M. A. Kissel (d).....6-182
High-Silicon Aluminum Casting Alloy, by John C. Wagner.....6-91
High-Temperature Tests on Aluminum Sand Castings (ds).....4-80B
Hot Cracking Test for Aluminum Alloy Welds, by W. G. Hull, D. F. Adams and H. E. Dixon (d).....2-162
Light Metal in Our Two-Ton Autos?, by E. E. Thum (cp).....3-49
Process Controls in Spot Welding of Aluminum Alloys, by William R. Galt (d).....1-137
Properties of a French Aluminum Alloy, by H. Roynet (d).....5-144
Service Failures of Aluminum Die-Casting Dies, by G. A. Roberts and A. H. Grove.....2-58
Sheet-Metal Fabrication in Britain, by Tom Bishop.....1-73
Size Effects in Fatigue Testing, by W. S. Hyler, R. A. Lewis and H. J. Grover (d).....6-160
Spot Welding Aluminum Alloys, by J. E. Roberts (d).....2-116
Stabilization of Aluminum Alloy Castings, by G. B. Olson.....4-79

Aluminizing

- Oxidation Resistance of Aluminized Steel, by M. L. Hughes and D. F. G. Thomas (d).....6-178

Annealing

- Titanium Alloy Reclamation by Vacuum Annealing, by D. N. Williams, R. I. Jaffee and C. A. Bentley, Jr.6-57

Antiquarian

- A Metallurgical Antiquarian, by V. A. Nekrassoff (c).....2-94

Atomic bombs

- Stocks of Nuclear Explosives.....6-90
Things the World Should Know, by Thomas E. Murray.....2-72

Atomic energy

- Atomic Information for Engineers and Industrialists, by the Editor.....5-91
Atoms for Peace—Metallurgical Topics Discussed at Geneva, by John P. Howe
Diplomatic Faux Pas, by E. Epreman (c).....4-104
The Fusion Reaction, by Henry DeWolf Smyth.....5-77
Geneva Atomic Conference, by Lewis L. Strauss.....1-78

Atomic power

- Atomic Reactors for Power.....3-62
Nuclear Metals Engineering, by A. B. McIntosh (d).....6-208
Physics, Metaphysics and Atomic Power, by E. E. Thum (cp).....6-49

Austenite decomposition

- Metastability of 18-8 Stainless Steel, by P. Cina (d).....3-126

Automation

- Automation in Steel Production, by R. W. Holman (d).....5-164

Automobiles

- Light Metal in Our Two-Ton Autos?, by E. E. Thum (cp).....3-49
Manufacture of Spot Welded Automobile Wheels, by Milton H. Grams.....3-63

Barium

- Micro-Examination of Barium Titanate, by D. Kontoleon and J. Tomlinson (c).....5-98

Bearings

- Corrosion of Bearings and Valves, by Z. S. Michalewicz (d).....6-188
Selection of Bearing Metals, by Arvid E. Roach and Carl L. Goodsett (d).....1-134
Wanted: A Long-Lived Bearing, by Alvin E. Smith (c).....4-104

Biographies

- Adolph O. Schaefer, President, A.S.M., 1956.....6-60
Conrad F. Nagel, Jr., Vice-President and Chief Metallurgist, Aluminum Co. of America.....3-72

Bismuth

- Bismuth Additions to Steel, by V. S. Boshko (d).....4-132

Blast furnace

- British Experience with High-Sinter Burdens, by G. D. Elliot, J. A. Bond and T. E. Mitchell (d).....1-178

Brazing

- Self-Fluxing Brazing Alloys, by N. Bredsz and D. Canonico (d).....4-156

Cable sheath

- Extrusion of Aluminum Cable Sheath, by G. M. Bouton, J. H. Heiss and G. S. Phipps (d).....2-130

Cadmium

- Conversion Coatings for Cadmium and Zinc, by Edward F. Foley, Jr.2-86

Cadmium plate

- Corrosion of Coated Steel in Contact With Al, by S. C. Britton and R. W. deV. Staepoole (d).....2-154

Carburizing

- Gas Carburizing Under Pressure, by O. P. Sorokina and D. I. Bron (d).....4-170

Case depth

- Measuring Case Depth—a Correction(c) 2-93
Nondestructive Case Depth Measurements, by Robert H. McCreery.....2-70

Cast iron

- Graphitization of Fe-C-Si Alloys, by W. S. Owen and J. Wilcock (d).....4-180
Structure and Properties of White Iron, by W. J. Williams (d).....3-140
Wear of Machine Tool Components, by H. T. Argus, D. Marles and M. H. Hillman (d).....5-138

Cast iron, nodular

- Electrolytic Polishing of Nodular Cast Iron, by R. E. Skoda.....2-66
Pinholing in Nodular Iron Castings, by J. Gittus (d).....1-166
Tensile Strength and Endurance Limit of Nodular Iron, by G. N. J. Gilbert and K. B. Palmer (d).....1-162

Casting

- High-Silicon Aluminum Casting Alloy, by John C. Wagner.....6-91
Vibration During Casting of Gas Turbine Blades, by S. Hinchliff and Josiah W. Jones (d).....2-134

Casting, precision investment

- Applications of Investment Castings (d) 6-132
Gating and Riserings of Investment Castings, by C. M. Adams.....5-58

(br) Book Review; (c) Correspondence; (cp) Critical Points; (d) Digest; (ds) Data Sheet; (sr) Short Runs.

Casting, sand Pinholing in Nodular Iron Castings, by J. Gittus (d).....	1-166
Casting, shell molding Shell Molding, by Jack E. Bolt; W. H. Dunn (c).....	3-95
Castings Automatic Sonic Inspection of Castings, by Milton J. Diamond (d).....	6-194
Cathodic Protection Cathodic Protection, by Benson G. Brand (d).....	6-154
Cermets Design of High-Temperature Alloys—Cermets and Oxide Dispersions, by Nicholas J. Grant.....	6-76
High-Temperature Parts Based on Titanium Carbide, by Walther L. Havokotte.....	4-58
Chemical coatings Conversion Coatings for Cadmium and Zinc, by Edward F. Foley, Jr.....	2-86
Conversion Coatings for Titanium, by P. D. Miller, R. A. Jefferys and H. A. Fray.....	5-67
Chromate coatings Chromate Coatings for Magnesium Alloys, by F. Ogburn, H. I. Salmon and M. L. Kronenberg (d).....	6-142
Chromate Conversion Coatings for Copper Alloys, by R. Stricklen and E. L. Gabel.....	4-93
Conversion Coatings for Cadmium and Zinc, by Edward F. Foley, Jr.....	2-86
Chromium Australian Production of Ductile Chromium, by H. L. Wain.....	1-91
The First Commercial Plant for Electro-winning of Chromium, by M. C. Carol-sella and J. D. Mettler.....	6-51
Chromium plate A World Text on Chromium Plating, by G. Dubpennell (br).....	3-74
Cleaning, salt bath Hydrogen Contamination of Titanium Minimized by Modified Descaling Bath, by H. L. Alexander, H. Farrell and Q. D. Wheatley.....	2-78
Coins Counterfeit Detected, by Frank C. Perkins (c).....	4-98
Controlled atmospheres Selection and Application of Furnace Atmospheres for Carbon Control, by O. E. Cullen.....	3-57
Copper Aluminum Versus Copper, by C. W. Nielsen (d).....	4-168
Chromate Conversion Coatings for Copper Alloys, by R. Stricklen and E. L. Gabel.....	4-93
Corrosion Atmospheric Corrosion of Aluminum, by W. D. Clark (d).....	4-136
Corrosion by Molten Metal, by David H. Gurinsky (d).....	4-160
Corrosion of Bearings and Valves, by Z. S. Michalewicz (d).....	6-188
Corrosion of Coated Steel in Contact With Al, by S. C. Britton and R. W. deV. Staepole (d).....	2-154
Corrosion of Iron by Oxygen-Contaminated Sodium, by G. W. Horsley (d).....	4-188
Corrosion of Lead-Base Babbitt Alloys (d).....	4-174
Corrosion of "Tin Cans", by R. K. Sanders (d).....	2-138
Corrosion Resistance and Mechanical Properties of Cr-Ni-Mn Stainless Steels, by R. A. Lala and W. G. Renshaw.....	2-73
Low-Alloy Steels to Resist Corrosion, by J. C. Hudson and J. F. Stanners (d).....	2-106
Predicting Corrosion Resistance by Microscopic Examination, by John H. Scott.....	5-79
Structure Vs. Corrosion Rate for Type 304L Stainless, by J. H. Scott (ds).....	3-80B
Cracks Cracking of Stainless Steel Welds, by J. Heuschkel (d).....	2-120
Delayed Cracking of Rolled Ti-150A, by Harold Bernstein.....	5-65
Microcracks in Case Hardened Steel, by A. H. Rauch and W. R. Thurtle.....	4-73
Creep Creep of Vanadium-Bearing Steels, by O. L. Bihet (d).....	5-141
Russian Theory for Creep Fracture, by I. A. Odling and V. S. Ivanova (d).....	3-158
Damascus blades A Metallurgical Antiquarian, by V. A. Nekrasoff (c).....	2-94
Die casting Service Failures of Aluminum Die-Casting Dies, by G. A. Roberts and A. H. Grobe.....	2-58
Dies "Gmoolie"—a Low-Cost Die Material, by J. C. Holawarth and A. L. Boegehold.....	5-49
Service Failures of Aluminum Die-Casting Dies, by G. A. Roberts and A. H. Grobe.....	2-58
Diffusion Decomposition of Metastable Structures by Plastic Deformation, by V. A. Pavlov (d).....	2-160
Diffusion in Iron-Chromium Alloys, by P. L. Gruzin (d).....	2-126
Diffusion in Metals, by R. E. Hoffman (d).....	6-186
Ductility A Nomograph for Strain Conversion, by F. Forscher (ds).....	5-80B
A Nomograph for Strain Conversion, by F. Forscher (c).....	5-96
Education Training of Technical and Scientific Manpower in the U.S.S.R., by N. H. Polakowski.....	1-68
Electrical properties Superconductivity, by A. Wexler.....	3-89
Electrowinning The First Commercial Plant for Electro-winning of Chromium, by M. C. Carol-sella and J. D. Mettler.....	6-51
Enameling Effect of Oxygen on Porcelain Enamel Adherence, by A. G. Eubanks and D. G. Moore (d).....	4-184
Engineer A Mere Youngster Salutes Its Elder, by E. E. Thum (cp).....	3-51
Engines High-Temperature Alloys for Jet-Engine Buckets, by Stephen G. Demirjian (d).....	6-198
Etching On the Importance of Reading the Hand-book Supplement Carefully, by D. White (c).....	6-94
Extrusion Extruding Metal With Glass Lubricants, by J. Delcroix.....	1-57
Extrusion of Aluminum Cable Sheath, by G. M. Bouton, J. H. Heiss and G. S. Phipps (d).....	2-130
Fatigue Fatigue in Theory and Practice, by Paul P. Mosley (br).....	5-66
Size Effects in Fatigue Testing, by W. S. Hyler, R. A. Lewis and H. J. Grover (d).....	6-160
Fisheyes Fisheyes in Weld-Metal Test Bars, by R. Winterton (d).....	5-120
Flakes Recent Accidents With Large Forgings, by Eduard Houdremont (c).....	3-93
Forgings Current Studies of Large Forgings, by A. O. Schaefer.....	4-63
Failures of Forged Turbine Blades, by F. B. Garratt, C. A. Gyorak and J. W. Weeton (d).....	2-166
Recent Accidents With Large Forgings, by E. E. Thum.....	2-49
Recent Accidents With Large Forgings, by Eduard Houdremont (c).....	3-93
Segregates in Large Steel Blocks, by E. J. Pavacic (c).....	5-112
Steel Degassed During Pouring of Large Forging Ingots, by Arthur Tix.....	6-81
Foundry British Foundry Practice, by E. D. Howard (d).....	3-172
Measuring Foundry Efficiency, by A. A. Timmins (d).....	5-158
Furnaces Versatile Melting Equipment for Alloy Development, by L. M. Bianchi and A. J. Schulte.....	5-73
Gas turbines Gas Turbines for Industry, by G. R. Fusner (d).....	6-202
Geneva Atoms for Peace—Metallurgical Topics Discussed at Geneva, by John P. Howe.....	1-79
Geneva Atomic Conference, by Lewis L. Strauss.....	1-78
Ghosts Metal Termites, by L. P. Spalding (c).....	4-106
Grain boundaries Grain-Boundary Creep in Aluminum, by F. J. Rhines, W. E. Bond and M. A. Kissel (d).....	6-182
Grain growth Inhibition of Grain Growth, by A. B. Chatterjee and B. R. Nijhawan (d).....	4-142
Graphitization Graphitization of Fe-C-Si Alloys, by W. S. Owen and J. Wilcock (d).....	4-180
H-bombs Radioactive Strontium From H-Bombs, by Willard F. Libby.....	4-92
Handbook On the Importance of Reading the Handbook Supplement Carefully, by D. White (c).....	6-94
Hardening Microcracks in Case Hardened Steel, by A. H. Rauch and W. R. Thurtle.....	4-73
Hardness tests Errors in Hardness Testing, by T. O. Mulhearn and L. E. Samuels (d).....	3-142
Heat resisting alloys Another Jet Engine Alloy, by W. L. Havokotte (c).....	5-96
Approximate Strength of Industrial Gas Turbine Alloys Treated for Optimum Properties (ds).....	2-80B
Approximate Strength of Jet Engine Alloys After Optimum Treatment (ds).....	1-96B
Design of High-Temperature Alloys—Cermets and Oxide Dispersions, by Nicholas J. Grant.....	6-76
Design of High-Temperature Alloys; I—Influence of Fabrication History, by Nicholas J. Grant.....	5-81
Failures of Forged Turbine Blades, by F. B. Garrett, C. A. Gyorak and J. W. Weeton (d).....	2-166
High-Temperature Alloys for Jet-Engine Buckets, by Stephen G. Demirjian (d).....	6-198
New Gas Turbine Alloy, by D. K. Hanink, F. J. Webbere and A. L. Boeschold (d).....	4-132
Vibration During Casting of Gas Turbine Blades, by S. Hinchliff and Josiah W. Jones (d).....	2-134
Heat treatment Heat Treatment of Steel for Good Machinability, by H. Opitz, S. Ammarel-ler and H. Koelzer.....	1-108
High-temperature properties Russian High-Temperature Testing Tech-niques, by A. A. Bocharov, M. E. Drits and E. S. Kadaner (d).....	2-106
History Fifty Years of Progress in Arc-Furnace Electrodes, by F. B. O'Mara.....	4-81
Fifty Years of Progress in Electric Fur-nace Steelmaking, by Howard J. Stagg.....	4-49
The First Successful Bessemer Steel, by Karl Fredrik Goransson.....	1-85
Ingots Ingot Heat Conservation, by M. D. Ash-ton, R. F. Perkins and L. H. W. Savage (d).....	4-154
Inspection, sonic Automatic Sonic Inspection of Castings, by Milton J. Diamond (d).....	6-194
Iron Solubility of Nitrogen in Alpha Iron, by E. T. Turkdogan, S. Ignatowicz and J. Pearson (d).....	3-120
Strain Aging of High-Purity Iron, by B. Jones and R. A. Owen-Barnett (d).....	1-142
Iron-aluminum alloys Iron-Aluminum Alloys, by Joseph F. Nachman and W. J. Buehler; V. F. Zackay and E. R. Morgan (c).....	2-93
Iron-chromium alloys Diffusion in Iron-Chromium Alloys, by P. L. Gruzin (d).....	2-126
Lead Corrosion of Lead-Base Babbitt Alloys (d).....	4-174
Light metallurgy If This Be Treason, Make the Most of It, by S. J. Manganello.....	6-88
Low-temperature properties Relation Between Impact and Tensile Strength at Low Temperatures, by R. F. Hall and R. W. Nichols (d).....	3-154
Lubricants Extruding Metal With Glass Lubricants, by J. Delcroix.....	1-57
Machinability Heat Treatment of Steel for Good Machinability, by H. Opitz, S. Ammarel-ler and H. Koelzer.....	1-108

(br) Book Review; (c) Correspondence; (cp) Critical Points; (d) Digest; (ds) Data Sheet; (sr) Short Runs.

Magnaflux Magnafux Indications, by A. F. Sprankle (d)..... 3-162 Magnafux Indications of Quality, by A. F. Sprankle (c)..... 5-108	Powder metallurgy Powder Metallurgy in Japan, by Takashi Kimura and Henry H. Hausner..... 1-61 Powder Metallurgy Permits Air Cooling of Turbine Blades, by R. W. A. Buswell, I. Jenkins and E. R. Perry..... 3-52	Stress-corrosion Cracking of Stainless by T. P. Hoar and J. G. Hines (d)..... 5-154 Stress-corrosion Cracking of Stainless Steel , by G. Klingel..... 4-77 Structure Vs. Corrosion Rate for Type 304 L Stainless , by J. H. Scott (ds)..... 3-80B
Magnesium Chromate Coatings for Magnesium Alloys, by F. Ogburn, H. I. Salmon and M. L. Kronenberg (d)..... 6-142	Presswork Sheet-Metal Fabrication in Britain, by Tom Bishop..... 1-73	Statistical control How Statistical Techniques Solve Metalworking Problems Part I, by Chester R. Smith..... 2-81 How Statistical Techniques Solve Metalworking Problems Part II, by Chester R. Smith..... 3-76 More on Statistical Techniques, by Chester R. Smith (c)..... 5-98
Magnesium, reduction by Reduction of Uranium With Magnesium, by H. A. Wilhelm..... 3-81	Prestress Prestressing an Ultra High-Strength Steel to Perform Even Higher Duty, by Jerome W. Kaufman..... 5-87	Steelmaking Ingot Heat Conservation, by M. D. Ashton, R. F. Perkins and L. H. W. Savage (d)..... 4-154 Russians Use Tagged Isotopes to Study Steelmaking..... 6-62
Magnetic materials Iron-Aluminum Alloys, by Joseph F. Nachman and W. J. Huehler (c)..... 2-93	Pressure vessels A Strong Weldable Steel, by J. H. Gross and R. D. Stout (d)..... 6-158 Stress-Relief of Welded Vessels, by T. W. Greene and C. R. McKinsey (d)..... 6-168 Welding Nickel Alloys, by R. M. Wilson, Jr. and W. F. Burchfield (d)..... 6-204	Steelmaking, bessemer The First Successful Bessemer Steel, by Karl Fredrik Goransson..... 1-85
Martensite Effect of Martensite on Stress-Corrosion Cracking, by M. F. Baldy and R. C. Bowden, Jr. (d)..... 2-142	Pure metals Metals of High Purity, by J. C. Chaston 1-64 Strain Aging of High-Purity Iron, by B. Jones and R. A. Owen-Barnett (d) 1-142	Steelmaking, electric Fifty Years of Progress in Arc-Furnace Electrodes, by F. B. O'Mara..... 4-81 Fifty Years of Progress in Electric Furnace Steelmaking, by Howard J. Stagg..... 4-49 Melting Practices for Stainless Steels (d) 3-130
Metallography Micro-Examination of Barium Titanate, by D. Kontoleon and J. Tomlinson (c) 5-98 Nondestructive Metallographic Examination, by K. Sachs and J. D. Bunton (d)..... 4-158 Quantitative Metallography by Lineal Analysis, by Robert A. Huggins (c)..... 6-94	Radioactive tracers Russians Use Tagged Isotopes to Study Steelmaking..... 6-62	Steelmaking, oxygen I.D.-Process of Steelmaking With Oxygen Jet, by Herbert Trenkler and H. F. Hattmann..... 1-49 Oxygen Steelmaking, by D. O. Davis (d)..... 6-162
Metallurgy, foreign Metallurgical Research in India, by C. L. Mantell (c)..... 4-102 Metallurgical Research in India, by R. F. Bunshah..... 1-88 Metalworking in Colombia, South America, by Gerald X. Diamond..... 1-97 More on Indian Research, by R. F. Bunshah (c)..... 6-102 New Russian Metallurgical Publications, by A. G. Guy..... 5-78 Russian Iron and Steel Industry, by Tom Bishop (c)..... 2-91	Refining, nonferrous Metals of High Purity, by J. C. Chaston 1-64	Steels, alloy British Developments in Special Steels, by G. T. Harris and E. Johnson (d)..... 1-170
Metaphysics Physics, Metaphysics and Atomic Power, by E. E. Thum (cp)..... 6-49	Research Current Research in the United States, by Edgar C. Bain (d)..... 6-174 Industrial Planning in U.S.S.R., by W. H. Brandt (c)..... 4-98 Metallurgical Laboratory Manual, by F. J. Shortleeve (br)..... 4-90 Metallurgical Research in India, by R. F. Bunshah..... 1-88 Metallurgical Research in India, by C. L. Mantell (c)..... 4-102 More on Indian Research, by R. F. Bunshah (c)..... 6-102 William Park Woodside and His Philosophy of Research, by Alvin J. Herzig..... 5-68	Steels, boron Mechanical Properties of Medium-Carbon Boron Steels, by J. R. Kattus and C. L. Dotson..... 4-68
Microscopy Predicting Corrosion Resistance by Microscopic Examination, by John H. Scott..... 3-79	Resin coatings Epoxy Coating Safeguards Laboratory Furniture, by William A. Poe..... 2-62	Steels, high-strength A Strong Weldable Steel, by J. H. Gross and R. D. Stout (d)..... 6-158 Prestressing an Ultra High-Strength Steel to Perform Even Higher Duty, by Jerome W. Kaufman..... 5-87
Microstructures Structure Vs. Corrosion Rate for Type 304 L Stainless, by J. H. Scott (ds)..... 3-80B	Russian publications New Russian Metallurgical Publications, by A. G. Guy..... 5-78	Steels, low-alloy Low-Alloy Steels to Resist Corrosion, by J. C. Hudson and J. F. Stanners (d)..... 2-106
Molybdenum Effect of Molybdenum in Iron and Steel, by Alvin J. Herzig..... 6-72	Safety Chromic Acid-Acetic Anhydride "Explosion", by A. E. Dawkins (c)..... 5-110	Steels, molybdenum Effect of Molybdenum in Iron and Steel, by Alvin J. Herzig..... 6-72
Nickel Sheet-Metal Fabrication in Britain, by Tom Bishop..... 1-73 Welding Nickel Alloys, by R. M. Wilson, Jr. and W. F. Burchfield (d)..... 6-204	Salt baths Hydrogen Contamination of Titanium Minimized by Modified Descaling Bath, by H. L. Alexander, H. Farrell and Q. D. Wheatley..... 2-78 Molten Baths - Error Corrected, by L. B. Rousseau (c)..... 2-93 Production Control of Salt Baths in Germany, by Otto Schaaber..... 3-67	Steels, vanadium Creep of Vanadium-Bearing Steels, by O. L. Bibet (d)..... 5-141
Nitriding Continuing Study Given Nitriding Variables, by G. J. Cox (d)..... 2-112	Segregation Segregates in Large Steel Blocks, by E. J. Pavonis (c)..... 5-112	Strain aging Strain Aging of High-Purity Iron, by B. Jones and R. A. Owen-Barnett (d) 1-142
Nitrogen Nitriding in Air, by B. R. Nijhawan; Reed Knox, Jr. (c)..... 6-98 Solubility of Nitrogen in Alpha Iron, by E. T. Turkdogan, S. Ignatowicz and J. Pearson (d)..... 3-120 Where Does the Nitrogen Come From? by G. H. Enxian; Reed Knox, Jr. (c) 5-102	Service failures Failures of Forged Turbine Blades, by F. B. Garrett, C. A. Gyorgak and J. W. Weeton (d)..... 2-166	Strength-Weight Ratio Effect of Temperature on Strength-Weight Ratio of Aircraft Materials, by George D. Cremer (ds)..... 6-80B
Oxidation Oxidation Resistance of Aluminized Steel, by M. L. Hughes and D. F. G. Thomas (d)..... 6-178	Sheet metal Sheet-Metal Fabrication in Britain, by Tom Bishop..... 1-73	Stress-corrosion Effect of Martensite on Stress-Corrosion Cracking, by M. F. Baldy and R. C. Bowden, Jr. (d)..... 2-142 Stress-Corrosion Cracking of Stainless, by T. P. Hoar and J. G. Hines (d)..... 5-154 Stress-Corrosion Cracking of Stainless Steel, by G. Klingel..... 4-77
Patent Office Patent Office Needs Young Engineers, by Henry E. Sharpe (c)..... 6-104	Shell cases Heat Treating Shell Cases, by L. Shiller (d)..... 5-168	Stress-relief Stress-Relief of Welded Vessels, by T. W. Greene and C. R. McKinsey (d) 6-168
Physics Physics, Metaphysics and Atomic Power, by E. E. Thum (cp)..... 6-49	Shot-Blasting Descaling Steel Sheet by Shot-Blasting, by Wilhelm Olson..... 6-66	Strontium Radioactive Strontium From H-Bombs, by Willard F. Libby..... 4-92
Pig iron British Experience with High-Sinter Burdens, by G. D. Elliot, J. A. Bond and T. E. Mitchell (d)..... 1-178	Specifications Steel Specifications, by W. D. Gilder; E. H. Snyder (c)..... 3-94	Superconductivity Superconductivity, by A. Wexler..... 3-89
Phosphate coatings Conversion Coatings for Cadmium and Zinc, by Edward F. Foley, Jr. 2-86	Stainless steels Corrosion Resistance and Mechanical Properties of Cr-Ni-Mn Stainless Steels, by R. A. Lila and W. G. Renshaw..... 2-73 Cracking of Stainless Steel Welds, by J. Heuschkel (d)..... 2-120 Experience With High-Manganese Stainless Steel, by Richard E. Pavet..... 6-68 Fabrication of Low-Nickel, High-Manganese Stainless Steels, by Richard E. Pavet..... 5-54 Melting Practices for Stainless Steels (d) 3-130	Thermocouples New Thermocouple for Service in Reducing Atmospheres, by Charles L. Guettel..... 4-89
Plastic deformation Decomposition of Metastable Structures by Plastic Deformation, by V. A. Pavlov (d)..... 2-169	Metastability of 18-8 Stainless Steel , by P. Cina (d)..... 3-126 Predicting Corrosion Resistance by Microscopic Examination, by John H. Scott..... 3-79 Pressure Welding Stainless Steel Tubing, by L. Rotherham (d)..... 4-194 Strengthening Stainless Steels, by J. I. Morley (d)..... 1-174	Tin plate Corrosion of Coated Steel in Contact With Al, by S. C. Britton and R. W. deV. Staepole (d)..... 2-154 Corrosion of "Tin Cans", by R. K. Sanders (d)..... 2-138
Polishing, electrolytic Chromic Acid-Acetic Anhydride "Explosion", by A. E. Dawkins (c)..... 5-110 New Industrial Uses of Electropolishing, by P. Jaquet and R. Mondon (d)..... 3-168		Titanium Conversion Coatings for Titanium, by P. D. Miller, R. A. Jefferys and H. A. Pray..... 5-61 Delayed Cracking of Rolled Ti-150 A, by Harold Bernstein..... 5-65
Polishing, metallographic Electrolytic Polishing of Aluminum, by P. A. Jaquet (d)..... 4-176 Electrolytic Polishing of Nodular Cast Iron, by R. E. Skoda..... 2-66		

(br) Book Review; (c) Correspondence; (cp) Critical Points; (d) Digest; (ds) Data Sheet; (sr) Short Runs.

Effect of Temperature on Titanium Alloys, by J. W. Butler (d).....	1-182
High-Temperature Parts Based on Titanium Carbide, by Walther L. Havakotte.....	4-56
How Good is Titanium, by L. R. Jackson and S. A. Gordon (d).....	6-128
Hydrogen Contamination of Titanium Minimized by Modified Descaling Bath, by H. L. Alexander, H. Farrell and Q. D. Wheatley.....	2-78
Liquid Titanium, by W. J. Kroll (c).....	2-94
On the Importance of Reading the Handbook Supplement Carefully, by D. White (c).....	6-94
Titanium Alloy Reclamation by Vacuum Annealing, by D. N. Williams, R. I. Jaffee and C. A. Bentley, Jr.....	6-57
Titanium Research Manual, reviewed by Harold Margolin (br).....	6-65

Toolsteels	
Service Failures of Aluminum Die-Casting Dies, by G. A. Roberts and A. H. Grobe.....	2-58

Tubemaking	
Pressure Welding Stainless Steel Tubing, by L. Rotherham (d).....	4-194

Tumbling	
Barrel Finishing for Burr Removal, by Charles E. Kincaid (d).....	6-164

Turbines	
Failures of Forged Turbine Blades, by F. B. Garrett, C. A. Grogan and J. W. Weston (d).....	2-166
Powder Metallurgy Permits Air Cooling of Turbine Blades, by R. W. A. Buswell, I. Jenkins and E. R. Perry.....	3-52

Welding of Gas Turbines in England, by G. C. Sandiford, R. T. Weatherstone, J. E. Hooper, K. H. McDonnell and L. C. Camidge (d).....	3-174
--	-------

Uranium	
Dimensional Stability of Uranium (d).....	3-134
Reduction of Uranium With Magnesium, by H. A. Wilhelm.....	3-81

Vacuum melting	
Steels Degassed During Pouring of Large Forging Ingots, by Arthur Tix.....	6-81

Valves	
Corrosion of Bearings and Valves, by Z. S. Michalewicz (d).....	6-188

Wear	
Wear of Machine Tool Components, by H. T. Argus, D. Marles and M. H. Hillman (d).....	5-138
Wear of Metals by Sand Erosion, by Werner A. Stauffer.....	1-102

Weldability	
A Strong Weldable Steel, by J. H. Gross and R. D. Stout (d).....	6-158

Welding	
Fusion Welding of a High-Strength Aluminum Alloy, by J. B. Arthur (d).....	4-164
Welding Nickel Alloys, by R. M. Wilson, Jr. and W. F. Burchfield (d).....	6-204

Welding, arc	
Welding of Gas Turbines in England, by G. C. Sandiford, R. T. Weatherstone, J. E. Hooper, K. H. McDonnell and L. C. Camidge (d).....	3-174

Welding, flash	
Flash Welding Jet Engine Rings, by Arthur G. Fortz.....	2-67

Welding, spot	
Manufacture of Spot Welded Automobile Wheels, by Milton H. Grams.....	3-63
Process Controls in Spot Welding of Aluminum Alloys, by William R. Gain (d).....	1-137
Spot Welding Aluminum Alloys, by J. E. Roberts (d).....	2-116

Welding rods	
Welding Rod Coatings Without Ferromanganese, by D. R. Dhanbhora, S. Visvanathan and S. N. A. Narayan (d).....	4-192

Weld tests	
Cracking of Stainless Steel Welds, by J. Heuschkel (d).....	3-120
Fisheyes in Weld-Metal Test Bars, by R. Winterton (d).....	3-120
Hot Cracking Test for Aluminum Alloy Welds, by W. G. Hull, D. F. Adams and H. E. Dixon (d).....	2-162
Weld Cracking Test, by P. T. Houldcroft (d).....	5-128

Zinc	
Conversion Coatings for Cadmium and Zinc, by Edward F. Foley, Jr.....	2-86
"Gmoodle"—a Low-Cost Die Material, by J. C. Holzwarth and A. L. Boegehold.....	5-49

Zinc plate	
Corrosion of Coated Steel in Contact With Al, by S. C. Britton and R. W. deV. Stacpool (d).....	2-154

Author Index

Adams, C. M.....	5-58	Gain, William R. (d).....	1-137	Kissel, M. A. (d).....	6-182	Roach, Arvid E. (d).....	1-134
Adams, D. F. (d).....	2-162	Garrett, F. B. (d).....	2-166	Klingel, G.....	4-77	Roberts, J. A.....	2-58
Alexander, H. L.....	2-78	Gilbert, G. N. J. (d).....	1-162	Knox, Reed Jr. (c).....	5-102, (c) 6-98	Roberts, J. E. (d).....	2-116
Ammarelli, S.....	1-108	Gilder, W. D. (c).....	3-94	Koelzer, H.....	1-108, (c) 6-98	Roinet, H. (d).....	5-144
Argus, H. T. (d).....	5-138	Gittus, J. D. (d).....	1-166	Kontoleon, D. (c).....	5-98	Roseau, L. B. (c).....	2-93
Arthur, J. B. (d).....	4-164	Goodzeit, Carl L. (d).....	1-134	Kroll, W. J. (c).....	2-94	Rotherham, L. (d).....	4-194
Ashton, M. D. (d).....	4-154	Goransson, Karl Fredrik.....	1-85	Kronenberg, M. L. (d).....	6-142	Sachs, K. (d).....	4-158
Bain, Edgar C. (d).....	6-174	Gordon, S. A. (d).....	6-128	Lessells, John M. (br).....	5-66	Salmon, H. I. (d).....	3-142
Baldy, M. F. (d).....	2-142	Grams, Milton H.....	3-63	Lewis, R. A. (d).....	6-160	Samuels, L. E. (d).....	6-142
Bentley, C. A. (d).....	6-57	Grant, Nicholas J.....	5-81, 6-76	Libby, Willard F.....	4-12	Sanders, R. K. (d).....	2-138
Bernstein, Harold.....	5-45	Greene, T. W. (d).....	6-168	Lola, R. A.....	2-73	Sandiford, G. C. (d).....	3-174
Bianchi, L. M.....	5-73	Grobe, A. H.....	2-58	Mancasello, S. J.....	6-88	Savage, L. H. W. (d).....	4-154
Bihet, O. L. (d).....	5-141	Gross, J. H. (d).....	6-158	Mantell, C. L. (c).....	4-102	Schaaber, Otto.....	3-67
Bishop, Tom.....	1-73, (c) 2-91	Grover, H. J. (d).....	6-160	Margolin, Harold (br).....	6-65	Schaefer, A. O.....	4-63
Bochvar, A. A. (d).....	2-106	Gruzin, P. L. (d).....	2-126	Marles, D. (d).....	5-138	Schulte, A. J.....	5-73
Boegehold, A. L. (d).....	4-132, 5-49	Guettel, Charles L.....	4-89	McCreery, Robert H.....	2-70	Scott, John H.....	3-78, (ds) 3-80B
Bolt, Jack E. (c).....	3-95	Gurinsky, David H. (d).....	4-160	McDonnell, K. H. (d).....	3-174	Seybolt, A. U. (br).....	4-90
Bond, J. A. (d).....	1-178	Guy, A. G.....	5-78	McIntosh, A. B. (d).....	6-208	Sharpe, Henry E. (c).....	6-104
Bond, W. E. (d).....	6-182	Gyrol, C. A. (d).....	2-166	McKinsey, C. R. (d).....	6-164	Shiller, L. (d).....	5-168
Bouton, G. M. (d).....	2-130	Hall, H. F. (d).....	3-154	McQuillan, M. K. (br).....	6-65	Shortleaves, F. J. (br).....	4-90
Bowden, R. C. Jr. (d).....	2-142	Hanink, D. K. (d).....	4-132	McQuillan, A. D. (br).....	6-55	Skoda, R. E.....	2-66
Bozhko, V. S. (d).....	4-832	Harris, G. T. (d).....	1-170	Mettler, J. D.....	6-51	Smith, Alvin E. (c).....	4-104
Brand, Benson G. (d).....	6-154	Hausner, Henry H.....	1-61	Michalewicz, Z. S. (d).....	6-188	Smith, Chester R.....	
Brandt, W. H. (c).....	4-98	Hautmann, H. F.....	1-49	Miller, P. D.....	5-61		2-81, 3-76, (c) 5-98
Bredas, N. (d).....	4-156	Havakotte, Walther L.....	4-56, (c) 5-96	Mitchell, T. E. (d).....	1-178	Smyth, Henry DeWolf.....	5-77
Britton, S. C. (d).....	2-154	Heiss, J. H. (d).....	2-130	Mondon, R. (d).....	3-168	Snyder, E. H. (c).....	3-94
Bron, D. I. (d).....	4-170	Herenruel, J. (d).....	6-212	Moore, D. G. (d).....	4-184	Sorokina, O. P. (d).....	4-170
Buehler, W. J. (c).....	2-93	Hertz, Alvin J.....	5-58, 6-72	Morgan, E. R. (c).....	2-93	Spalding, L. P. (c).....	4-108
Burns, R. F. (d).....	1-88, (c) 6-102	Heuschkel, J. (d).....	2-120	Morley, J. I. (d).....	1-174	Sprinkle, A. F.....	
Burke, J. E. (br).....	4-90	Hillman, M. H. (d).....	5-138	Morrissey, P. (br).....	3-74		3-162, (c) 5-108
Buswell, R. W. A.....	3-52	Hinchliff, S. (d).....	2-134	Moxley, Paul P. (br).....	5-66	Stacpool, R. W. deV. (d).....	2-154
Camidge, L. C. (d).....	3-174	Hines, J. G. (d).....	5-154	Murphy, Thomas E.....	2-72	Stagg, Howard J.....	4-49
Canonico, D. (d).....	4-156	Hoar, T. P. (d).....	5-154	Nachman, Joseph F. (c).....	2-93	Stanners, J. F. (d).....	2-106
Carosella, M. C.....	6-51	Hoffman, R. E. (d).....	6-186	Narayan, S. N. A. (d).....	4-192	Stauffer, Werner A.....	1-102
Chaston, J. C.....	1-44	Holman, R. W. (d).....	5-164	Nekrasoff, V. A. (c).....	2-94	Stout, R. D. (d).....	6-158
Chatterjee, A. B. (d).....	4-142	Holzwarth, J. C.....	5-49	Nichols, R. W. (d).....	3-154	Strauss, Lewis L.....	1-78
Cina, P. (d).....	3-126	Hooper, J. E. (d).....	3-174	Nielsen, C. W. (d).....	4-168	Stricklen, R.....	4-93
Clark, W. D. (d).....	4-136	Horsley, G. W. (d).....	4-188	Nijhawan, B. R. (d).....	4-142, (c) 6-98	Sulter, J. W. (d).....	1-182
Cox, G. J. (d).....	2-112	Houdremont, Eduard (c).....	3-93	Oding, I. A. (d).....	3-158	Thomas, D. F. G. (d).....	6-178
Cremer, George D. (ds).....	6-80B	Houldcroft, P. T. (d).....	5-138	Ogburn, F. (d).....	6-142	Thum, E. K.....	2-49, (cp) 3-49, (cp) 3-51, 5-91, (cp) 6-49
Cullen, O. E.....	3-57	Howard, E. D. (d).....	3-172	Olson, G. B.....	4-79	Thurle, W. R.....	4-73
Davis, D. O. (d).....	6-162	Howe, John F.....	1-79	Olson, Wilhelm.....	6-66	Timmins, A. A. (d).....	5-158
Dawkins, A. E. (c).....	5-110	Hudson, J. C. (d).....	2-106	O'Mara, F. R.....	4-81	Tix, Arthur.....	6-81
Delcroix, J.....	1-57	Huggins, Robert A. (c).....	6-94	Opitz, H.....	1-108	Tomlinson, J. (c).....	5-98
Demirjian, Stephen G. (d).....	6-198	Hughes, M. L. (d).....	6-178	Owen, W. S. (d).....	4-180	Trenkler, Herbert.....	1-49
Dhanbhora, D. R. (d).....	4-192	Hull, W. G. (d).....	2-162	Owen-Barnett, R. A. (d).....	1-142	Turkdogan, K. T. (d).....	3-120
Diamond, Gerald X.....	1-97	Hyler, W. S. (d).....	6-160	Paret, Richard E.....	5-54, 6-168	Visvanathan, S. (d).....	4-192
Diamond, Milton J. (d).....	6-194	Ignatowicz, S. (d).....	3-120	Pavesle, E. J. (c).....	5-112	Wagner, John C.....	6-91
Dixon, H. E. (d).....	2-162	Ivanova, V. S. (d).....	3-158	Pavlov, V. A. (d).....	2-160	Wain, H. L.....	1-91
Dixson, C. L.....	4-68	Jackson, L. R. (d).....	6-128	Pearson, J. (d).....	3-120	Weatherstone, R. T. (d).....	3-174
Drite, M. E. (d).....	2-166	Jacquet, F. A. (d).....	4-176, (d) 3-168	Perkins, Frank C. (c).....	4-98	Webber, F. J. (d).....	4-132
Dubpersell, G. (br).....	3-74	Jaffee, R. I.....	6-57	Perkins, R. F. (d).....	4-154	Wetton, J. W. (d).....	2-166
Dunn, W. H. (c).....	3-95	Jeffers, R. A.....	5-81	Perry, E. K.....	3-52	Wexler, A. D.....	3-89
Elliott, G. D. (d).....	1-178	Jenkins, I.....	3-52	Phipps, G. S. (d).....	2-130	Wheatley, Q. D.....	2-78
Enzian, G. H. (c).....	5-102	Johnson, E. (d).....	1-170	Poe, William A.....	2-42	White, D. (c).....	6-94
Epreman, E. (c).....	4-104	Jones, B. (d).....	1-142	Polakowski, N. H.....	1-68	Wilcock, J. (d).....	4-180
Eubanks, A. G. (d).....	4-184	Jones, Josiah W. (d).....	2-134	Portz, Arthur G.....	2-67	Wilhelm, H. A.....	3-81
Farrell, H.....	2-78	Kadaner, E. S. (d).....	2-106	Pray, H. A.....	5-61	Williams, D. N.....	6-57
Foley, Edward F. Jr.....	5-86	Kattus, J. R.....	4-68	Rauch, A. H.....	4-73	Williams, W. J. (d).....	3-140
Forscher, F. (ds).....	5-80B, (c) 5-96	Kaufman, Jerome W.....	5-87	Renshaw, W. G.....	2-73	Wilson, R. M. Jr. (d).....	6-204
Fusner, G. R. (d).....	6-202	Kimura, Takashi.....	1-61	Rhines, F. J. (d).....	6-182	Winterton, R. (d).....	3-120
Gabel, E. L.....	4-93	Kincaid, Charles E. (d).....	6-164			Zackay, V. F. (c).....	2-93

(br) Book Review; (c) Correspondence; (cp) Critical Points; (d) Digest; (ds) Data Sheet; (sr) Short Runs.

Metal Progress

VOLUME 70—JULY THROUGH DECEMBER, 1956

Subject Index

Abrasives

- Better Barrel Finishing With Improved Abrasives, by William E. Brandt..... 1-88
Those Controversial Abrasive Mediums, by John F. Lange; D. W. Matteson; William E. Brandt (c)..... 5-114

Aging

- Aging Reactions in Superalloys, by W. C. Hagel and H. J. Beattie, Jr. (d)..... 3-254
Mechanical Properties of Age Hardenable Cu-Al Alloys, by J. P. Denison (d)..... 5-160

Aircraft

- Forming Sheet Metal Components for Aircraft, by John F. Tyrrell..... 3-110
Radial Draw Forming of Helicopter Components, by L. Favreau..... 4-88

Aluminum

- Aluminum Powder Metal Parts, by J. P. Lyle, Jr. (d)..... 6-158
Comparison of Finishes for Aluminum, by Walter E. Pocock (ds)..... 5-96B
Evaluation of Cumulative Fatigue Damage, by Ira Smith, Darnley M. Howard and Frank C. Smith (d)..... 2-178
Finishes for Aluminum Alloys, Part I—Electrolytic or Anodic Coatings, by Walter E. Pocock..... 4-75
Finishes for Aluminum Alloys, Part II—Chemical or Conversion Coatings, by Walter E. Pocock..... 5-97
French Anodizing Practice, by J. Herenquiel (d)..... 4-160
Mechanical Equation of State, by T. A. Trozera, O. D. Sherby and J. E. Dorn (d)..... 3-211
Modification of Al-Si Casting Alloy, by M. G. Neu (c)..... 4-112
More on Aluminum-Silicon Pistons, by E. V. Dewhurst; W. C. Cheney (c)..... 3-133
Stress-Corrosion of Aluminum Alloys, by F. A. Champion (d)..... 6-186
Welding Aluminum and Its Alloys, by W. I. Pumphrey (d)..... 2-132

Analysis, composition

- Rapid Chemical Analysis With the X-Ray Spectograph, by A. M. Reith and E. D. Weisert..... 1-83

Anodizing

- Comparison of Finishes for Aluminum, by Walter E. Pocock (ds)..... 5-96B
Finishes for Aluminum Alloys, Part I—Electrolytic or Anodic Coatings, by Walter E. Pocock..... 4-75
French Anodizing Practice, by J. Herenquiel (d)..... 4-160

Antimony

- Brittleness in Copper-Antimony Alloys, by L. M. T. Hopkins (d)..... 2-170

Atomic energy

- Frontiers of Atomic Science..... 1-80
Hush, Hush! by E. E. Thum (cp)..... 4-108

Atomic power

- Economic Atomic Power Depends on Materials of Construction, by John H. Frye, Jr. and James L. Greig..... 3-92
Power Reactor Programs in the U.S. (ds)..... 3-96B
Power Reactors for the Military..... 4-110
Radiations From the Atomic Industrial Forum, by Karl F. Smith..... 5-110

Austenite decomposition

- Austenite Stability of Fe-Cr-C-N Alloys, by G. F. Tinsal and C. H. Sammans (d)..... 3-244
Kinetics of Pearlite Formation, by M. E. Blanter (d)..... 5-180
Transformation on Continuous Cooling, by D. J. Blickwede and R. C. Hess (d)..... 3-172

Automobiles

- Gas Turbines for Autos, by John H. Boulin and Robert A. Harmon (d)..... 6-190
Materials in the Automobile of the Future, by A. L. Boegehold..... 3-163

Bainite

- Effect of Bainite on Strength, by R. F. Hehemann, V. Luhanov and A. R. Troiano (d)..... 3-196
The Bainite Transformation, by R. F. Hehemann and A. R. Troiano..... 2-97

Bearings

- Sleeve-Bearing Material, by Frank G. Norris (c)..... 1-112
Structural Analysis of Ball Bearing Steels, by Donald P. Koistinen (d)..... 5-150

Bending

- Springback Control in Bending, by Federico Strasser (d)..... 2-132

Biographies

- Donald Sherman Clark, National President, American Society for Metals, 1956-57..... 4-86
William Justin Kroll, 1955 Recipient Albert Sauveur Achievement Award, by Earl T. Hayes..... 2-86
Norman Luther Mochel, Manager of Metallurgical Engineering and Consulting Engineer, Westinghouse Electric Corp..... 6-86

Blast furnace

- Blast Furnace Construction by Welding, by T. Birchall (d)..... 2-156

Blasting

- Blast Cleaning Variables, by Otto Peltzer (d)..... 1-142

Boron

- Boron's Function in Hardening Steel, by G. M. Leuk (d)..... 3-148

Brass

- Axial Fatigue and Stress-Rupture in Alpha-Beta Brass, by J. E. Breen and Joseph R. Lane (d)..... 3-190
Precipitation Hardening of Brass Powder Compacts, by E. A. Anderson and E. H. Renhack (d)..... 5-190

Brittleness

- "Brittle" Fracture in Gray Iron, by W. R. Clough and M. E. Shank (d)..... 3-204
Brittleness in Copper-Antimony Alloys, by L. M. T. Hopkins (d)..... 2-170
Failures of Forged End Bells on Large Electric Generators..... 1-65
Low-Temperature Brittleness, by Charles S. Barrett..... 6-58
Size Effect in Brittle Fracture, by F. Forscher (c)..... 5-124
Tougher Iron-Aluminum Alloys, by W. Justusson, V. F. Zackay and E. R. Morgan (d)..... 3-182

Bronze

- Continuous Casting of Tin Bronzes, by E. C. Ellwood, J. C. Prytherch and E. F. Phelps (d)..... 6-146
New High-Strength Copper Alloy, by J. F. Klement and N. A. Birch..... 5-105
Properties of Phosphor Bronze, by G. R. Gohn, J. P. Guérard and H. S. Freynik (d)..... 6-184

Calcium

- Magnesium and Calcium as Metallurgical Reducing Agents, by L. M. Pidgion..... 5-75

Calibration

- Precision Measurements of Force, by Arthur C. Roge..... 1-92

Carbides

- Complex Carbides in Cr-Co-Mo-Ti-Fe Alloys, by H. J. Beattie, Jr. and F. L. VerSnyder (d)..... 3-228

Carburizing

- Carburizing by Induction Heating, by A. D. Assonov, K. Z. Shepeyakovskii and P. A. Lankin (d)..... 6-144
Cracking in Carburized Parts, by E. I. Malinkina (d)..... 6-170

Cast iron

- "Brittle" Fracture in Gray Iron, by W. R. Clough and M. E. Shank (d)..... 3-204

- Graphitization in White Cast Iron, by M. A. Krihtal (d)..... 5-182
Hardenability of Gray Iron, by A. D. Lamb (d)..... 6-174

Cast iron, malleable

- A New Composition for Fast Malleable, by A. L. Boegehold..... 4-73
Toughness of Malleable at Low Temperatures, by G. A. Sandos, N. C. Howells, H. F. Bishop and W. S. Pellini (d)..... 5-158

Cast iron, nodular

- New Nodular Iron Process, by Harry K. Ihrig (d)..... 3-154
Titanium and Lead in Nodular Cast Iron, by J. V. Dawson (d)..... 4-180

Casting, continuous

- Continuous Casting of Tin Bronzes, by E. C. Ellwood, J. C. Prytherch and E. F. Phelps (d)..... 6-146
Vertical Continuous Casting of Steel, by Karl G. Speith and Adolph Bungeroth (d)..... 6-180

Casting, precision investment

- Recent Developments in the Art of Precision Casting, by Nicholas J. Grant..... 3-113

Casting, sand

- Sand Mold Penetration Testing, by D. H. Houseman, D. V. Atterton and T. F. Hoar (d)..... 1-134

Ceramic Coatings

- High-Temperature Ceramic Coatings, by J. V. Long (d)..... 6-150

Ceramics

- Ceramics for Metal-Cutting Tools, by W. B. Kennedy (d)..... 5-200

Cermets

- Infiltration of Cermets for Improved Toughness, by Claus G. Goetzl and John B. Adams..... 6-101

Chromium

- Ductile Chromium Metal, by D. J. Maykuth and R. I. Jaffee (d)..... 3-200

Cobalt

- Sigma in Cr-Co-Mo Alloys, by Ronald Silverman, William Arbiter and Frank Hodi (d)..... 3-174

Controlled atmospheres

- Automatic Ratio Control for Endothermic Gas Generators, by H. N. Ipsen..... 2-107
Control of Controlled Atmospheres, by D. J. Schwalim..... 1-99
The Safe Operation of Atmosphere Furnaces, by J. Huebler..... 6-78

Copper

- Brittleness in Copper-Antimony Alloys, by L. M. T. Hopkins (d)..... 2-170
Mechanical Properties of Age Hardenable Cu-Al Alloys, by J. P. Denison (d)..... 5-160
New High-Strength Copper Alloy, by J. F. Klement and N. A. Birch..... 5-106

Corrosion

- Preservation of Stored War Material, by J. L. McCloud..... 6-84

Cracks

- Cracking in Carburized Parts, by E. I. Malinkina (d)..... 6-170
Cracking in Mild Steel Welds, by N. Christensen and R. Rose (d)..... 2-142
Only a Delay in Delayed Cracking, by Harold Bernstein (c)..... 2-112

Creep

- Effect of Environment on Creep-Rupture Properties, by Paul Shahinian (d)..... 3-232

Crystal structure

- Modern Theories of Physical Metallurgy, reviewed by R. W. Lindsay (br)..... 1-91

Crystals, single Metal Whiskers, by G. W. Sears and S. S. Brenner.....	5-85
Cupola practice Slag Control in Cupolas, by W. E. Clarke (d).....	5-183
Cutting fluids Effects of Cutting Fluid Compositions, by M. C. Shaw and P. A. Smith (d).....	4-154
Cutting tools Ceramics for Metal-Cutting Tools, by W. B. Kennedy (d).....	5-290
Crater Wear of Cutting Tools, by K. J. Triggner and B. T. Chao (d).....	4-176
Dephosphorization Dephosphorization of Bessemer Steels, by Karl G. Speith and Hans vom Ende (d).....	5-174
Dephosphorization With Moist Hydrogen, by P. C. Ghosh and B. Chatterjee (d).....	6-172
Desulphurization Desulphurization of Hot Metal, by C. A. Shanahan (d).....	4-172
Die casting European Report on American Die Casting Practice, by Donald C. Colwell (br).....	6-77
Diffusion Case Hardening Accelerated by Cyclic Stresses, by H. Schenck and E. Schmidtman (d).....	2-158
Russian Study of Diffusion, by V. I. Arkharov, K. A. Efremova, S. I. Ivanovskaya, A. K. Shtol'ts and B. A. Iunikov (d).....	4-152
Drawing Prediction of Drawing Properties From Tensile Tests, by E. N. Ludington.....	2-93
Sheet Metal Forming in England, by J. A. Grainger (d).....	5-206
Education Criticism of Engineering Education, by P. P. Love (d).....	1-146
Metallurgists Needed Badly!.....	1-80A
Metallurgists Needed Badly, by A. J. Smith (c).....	3-133
Trained Manpower for a Technical Age, by C. M. White.....	5-102
Elastic properties Changes in Modulus With Alloying, by W. H. Graft, D. W. Levinson and W. Rostoker (d).....	3-208
Springback Control in Bending, by Federico Strasser (d).....	2-132
Electroplating Conservation of Nickel in Electroplating, by V. L. McEnally, Jr. and F. G. Brune.....	6-89
Continuous Plating in Tandem Tanks, by A. N. Gray and G. E. Murray (d).....	4-142
Substitute for Wrought Nickel and Nickel-Clad Materials, by W. L. Clark (d).....	2-140
Etching Magnetic Oxide "Etchant", by George F. Tisinal (c).....	4-120
Extrusion Factors Affecting Extrusion Force, by Robert Chopin (d).....	2-172
Fabrication Forming Sheet Metal Components for Aircraft, by John F. Tyrrell.....	3-110
Stress Analysis of Metal Forming Operations, by W. Johnson (d).....	4-174
Fatigue Axial Fatigue and Stress-Rupture in Alpha-Beta Brass, by J. E. Breen and Joseph R. Lane (d).....	3-190
Evaluation of Cumulative Fatigue Damage, by Ira Smith, Darnley M. Howard and Frank C. Smith (d).....	2-178
Fatigue Life of Aircraft Quality Versus Vacuum Melted 4340, by H. N. Cummins, F. B. Stulen and W. C. Schulte (d).....	3-152
Statistical Treatment of Fatigue Data, by M. N. Torrey and G. R. Gohn (d).....	4-140
Ferrite Substructures in Ferrite, by P. Samuel and A. G. Quarrell (d).....	2-136
Ferro-alloys Ferrosilicon Manufacture at Marietta, by E. E. Thum.....	4-65
Flakes Elimination of Flakes in Large Forgings, by N. A. Timchenko (d).....	5-204
Forgings Elimination of Flakes in Large Forgings, by N. A. Timchenko (d).....	5-204
Failures of Forged End Bells on Large Electric Generators.....	1-65
Flaws in Large Forgings, by C. H. Hastings (c).....	1-110
Forgeability, by Albert Portevin (c).....	6-120
Foundry Handbook of Foundry Practice, reviewed by Francis W. Boulger (br).....	5-77
Fracture Fracture in Metals, by N. F. Mott (d).....	4-188
Size Effect in Brittle Fracture, by F. Forscher (c).....	5-124
Furnaces Multiple Crucible Arc Melting Furnace, by S. T. Ziegler and J. Terandy (c).....	6-116
Gallium Gallium, by H. P. Bonebrake.....	2-105
Gears Gear Tooth Wear, by George Uberti (d).....	2-182
Ghosts Skeleton in the Closet, by Robert Bakish (c).....	5-128
Grain boundaries Energy of Grain Boundaries, by D. McLean (d).....	1-156
Graphitization Graphitization in White Cast Iron, by M. A. Krishtal (d).....	5-182
Greek Ascology The Greeks Haven't Named It, by Robert S. Rose; W. L. Havekotte (c).....	2-112
Hardenability Boron's Function in Hardening Steel, by G. M. Leak (d).....	2-148
Hardenability of Alloy Steels, by H. J. French, O. O. Miller and J. W. Sands (d).....	5-192
Hardenability of Gray Iron, by A. D. Lamb (d).....	6-174
Hardening Case Hardening Accelerated by Cyclic Stresses, by H. Schenck and E. Schmidtman (d).....	2-158
Transformation on Continuous Cooling, by D. J. Blickwede and R. C. Hess (d).....	3-172
Hardness Hot Hardness of Iron and Steel of Super Purity, by F. Garofalo, G. V. Smith and D. C. Marsden (d).....	3-188
Wedge Specimens Reveal Hardness Penetration in Toolsteels, by A. J. Blackwell (d).....	2-152
Health Radiation Damage to Unborn Generations.....	3-127
Heat resisting alloys Aging Reactions in Superalloys, by W. C. Hagel and H. J. Beattie, Jr. (d).....	3-254
Austenite Stability of Fe-Cr-C-N Alloys, by G. F. Tisinal and C. H. Samans (d).....	3-244
Complex Carbides in Cr-Co-Mo-Ti-Fe Alloys, by H. J. Beattie, Jr. and F. L. VerSnyder (d).....	3-228
Effect of Environment on Creep-Rupture Properties, by Paul Shahinian (d).....	3-252
Fe-Al-Mo Alloys for High-Temperature Use, by J. F. Nachman and W. J. Buehler.....	6-107
New High-Temperature Alloy, by R. W. Guard and T. A. Prater (d).....	3-258
The Greeks Haven't Named It, by Robert S. Rose; W. L. Havekotte (c).....	2-112
Ti and B in Heat Resistant Steels, by J. Salvaggi and L. A. Yerkovich (d).....	3-234
Heat treatment Heat Treating Instructions for Toolsteel, by William P. Loehrer.....	6-115
Heat Treatment of Welded Alloy Steels (ds).....	2-96B
Quality Control Through Heat Treatment, by Joseph J. Wara.....	5-78
Selection of Heat Treating Process and Equipment, by E. J. Pavese and R. T. Sinnott.....	4-83
Impact strength Impact Properties of Lead Steels, by A. F. Weaver (d).....	3-198
Notched-Bar Properties of Ship Plate, by F. W. Boulger, R. H. Frasier and C. H. Lorig (d).....	2-174
Impact test New Dynamic Test, by George Girard and Ralph Papirno (d).....	3-192
Induction heat Carburizing by Induction Heating, by A. D. Asanov, K. Z. Shepelyakovskij and P. A. Lankin (d).....	6-144
Induction Melting of Titanium, by Paul J. Ahern and Conrad F. Frey (c).....	4-112
Inspection, magnetic particle Use of Tap Water in Magnetic Particle Inspection, by J. L. McCabe and B. Hirst.....	1-77
Inspection, sonic Flaws in Large Forgings, by C. H. Hastings (c).....	1-110
Ultrasonic Shear Wave Testing, by W. J. McGonagale.....	4-97
Iron Deformation in Iron Crystals, by J. J. Cox, G. T. Horne and R. F. Mehl (d).....	3-180
Hot Hardness of Iron and Steel of Super Purity, by F. Garofalo, G. V. Smith and D. C. Marsden (d).....	3-188
Notch Toughness of Ingot Iron, by J. C. Danko and R. D. Stout (d).....	3-178
Russian Study of Diffusion, by V. I. Arkharov, K. A. Efremova, S. I. Ivanovskaya, A. K. Shtol'ts and B. A. Iunikov (d).....	4-152
Iron-aluminum alloys Fe-Al-Mo Alloys for High-Temperature Use, by J. F. Nachman and W. J. Buehler.....	6-107
Tougher Iron-Aluminum Alloys, by W. Justason, V. F. Zackay and E. R. Morgan (d).....	3-182
Iron-nickel alloys Metallography of a Space Traveler, by C. R. Simcoe.....	2-72
Iron ore Magnetite Concentrates to Supplement High-Grade Iron Ore, by E. C. Wright.....	3-97
Light metallurgy Plates Will Be the Death of Me, by D. Carb (fm).....	2-89
Light metals The Light Metals in American Economy, by Francis C. Frary.....	3-128
Low-temperature properties Low-Temperature Brittleness, by Charles S. Barrett.....	6-68
Mechanical Properties at Very Low Temperatures, by G. V. Uzhik (d).....	6-178
Tensile Properties of Metals at Low Temperatures, by E. T. Wessel (d).....	3-238
Lubricants Some Effects of Lubricants in Cold Rolling Thin Strip, by J. C. Whetzel, Jr. and Charles Wyle.....	6-73
Machinability Measurement of Machinability, by D. F. Galloway (d).....	2-144
Machining Crater Wear of Cutting Tools, by K. J. Triggner and B. T. Chao (d).....	4-176
Evaluation of Metal Cutting, by F. J. Daasch (d).....	6-154
Machining Hard and Brittle Materials, by T. S. Quass and A. O. O'Brien (c).....	6-118
Machining, spark Machining Hard and Brittle Materials, by R. C. Hall.....	2-78
Magnesium Magnesium and Calcium as Metallurgical Reducing Agents, by L. M. Fidgeon.....	5-75
Magnetic materials Genie of the Magnet.....	5-74
Marine applications Iron and Steel for Marine Service, by S. F. Dorey (d).....	1-138
Martensite Martensite Formation in Austenitic Stainless, by P. G. Bastien and J.M.H. Dedieu (d).....	5-176
Metallurgy, physical Modern Theories of Physical Metallurgy, reviewed by R. W. Lindsay (br).....	1-91
Meteorites Metallography of a Space Traveler, by C. R. Simcoe.....	2-72
Microscopy Holder for Small Metallographic Specimens, by William R. Johnson (c).....	4-122
Plastic Laps for Metallographic Specimens, by V. J. Haddrell, E. C. Sykes and B. W. Mott (d).....	4-148
Molding, foundry Expendable Molds for Titanium Castings, by A. L. Feld, Jr.....	4-92
Molybdenum Development of Arc-Cast Molybdenum, by Alvin J. Herzog.....	1-103
Recent Studies on Ductile Molybdenum, by Julius J. Harwood.....	6-97
Transformation of U-Mo Alloys, by R. J. Van Thyne and D. J. McPherson (d).....	3-212
National Metal Congress Invitation.....	3-65
Technical Programs.....	3-66
National Metal Exposition Exhibitors, booth numbers and brief descriptions of products.....	3-88

Nickel

- Conservation of Nickel in Electroplating, by V. L. McNally, Jr. and F. G. Brune..... 6-89
Oxidation Resistance of Cr-Ni-Fe Alloys, by G. E. Zima (d)..... 3-214
Substitute for Wrought Nickel and Nickel-Clad Materials, by W. L. Clark (d)..... 2-140

Nonferrous extraction and refining

- Limitations to Processes Using a Metal as a Reducing Agent, by L. M. Pidgeon..... 4-79
Magnesium and Calcium as Metallurgical Reducing Agents, by L. M. Pidgeon..... 5-75
The Reduction of Ore to Metal, by L. M. Pidgeon..... 2-81

Ordinance

- Hush, Hush!, by E. E. Thum (cp)..... 4-108

Ore concentration

- Magnetite Concentrates to Supplement High-Grade Iron Ore, by E. C. Wright..... 3-97

Oxidation

- Oxidation Resistance of Cr-Ni-Fe Alloys, by G. E. Zima (d)..... 3-214

Oxygen

- Use of Oxygen in Steelmaking, reviewed by E. C. Wright (br)..... 4-107

Pearlite

- Kinetics of Pearlite Formation, by M. E. Blanter (d)..... 5-180

Per cents, conversion

- Conversion From Weight Per Cent to Atomic Per Cent in Binary Alloys, by F. Forscher and W. Debokey (ds)..... 4-96B

Phase relations

- Metallography of a Space Traveler, by C. R. Simcoe..... 2-72

Plastic deformation

- Deformation in Iron Crystals, by J. J. Cox, G. T. Horne and R. F. Mehl (d)..... 3-180
Mechanical Equation of State, by T. A. Trozera, O. D. Sherby and J. E. Dorn (d)..... 3-211

Plate

- Plates Will Be the Death of Me, by D. Carb (lm)..... 2-89

Polishing, metallographic

- Vibratory Polishing of Metallographic Specimens, by F. M. Krill..... 1-81

Powder metallurgy

- Aluminum Powder Metal Parts, by J. P. Lyle, Jr. (d)..... 6-158
Metal Powder Rolling—A New Fabrication Technique, by Samuel Storchheim..... 3-120
Precipitation Hardening of Brass Powder Compacts, by E. A. Anderson and E. H. Renhack (d)..... 5-190

Precipitation hardening

- Precipitation Hardening of Cr-Mn Stainless Steels, by Chi-Mei Hsiao and E. J. Dulis (d)..... 3-236

Prestressing

- Should High-Strength Parts Be Prestressed?, by R. E. Kemelhor (c)..... 2-112

Radioactive materials

- Radiation Damage to Unborn Generations..... 3-127

Rare earths

- Application of Rare Earths, by S. Becker Treat (d)..... 2-134

Reduction by metals, nonferrous

- Limitations to Processes Using a Metal as a Reducing Agent, by L. M. Pidgeon..... 4-79
Magnesium and Calcium as Metallurgical Reducing Agents, by L. M. Pidgeon..... 5-75

Research

- Research Into Metals—by Producers and Consumers, by E. E. Thum (cp)..... 2-65

Rolling

- Effect of Temper Rolling on Strain Aging, by H. P. Tardif and C. S. Ball (d)..... 1-134
Metal Powder Rolling—A New Fabrication Technique, by Samuel Storchheim..... 3-120
Some Effects of Lubricants in Cold Rolling Thin Strip, by J. C. Whetsel, Jr. and Charles Wyle..... 6-73

Rubber pad forming

- Rubber Forming Nonferrous Alloys, by J. Fielding (d)..... 2-184

Safety

- Explosion of Titanium and Fuming Nitric Acid Mixtures, by L. L. Gilbert and C. W. Funk..... 5-93
The Safe Operation of Atmosphere Furnaces, by J. Huebler..... 6-78

Sand technology

- Sand Mold Penetration Testing, by D. H. Houseman, D. V. Atterton and T. P. Hoar (d)..... 1-134

Sandwich structures

- Production of Honeycomb Sandwich Structures, by George D. Cremer..... 5-81

Sheet metal

- Forming Sheet Metal Components for Aircraft, by John F. Tyrrell..... 3-110
Sheet Metal Forming in England, by J. A. Grainger (d)..... 5-206

Ships

- Notched-Bar Properties of Ship Plate, by F. W. Boulger, R. H. Frazier and C. H. Lorig (d)..... 2-174

Sigma phase

- Sigma in Cr-Co-Mo Alloys, by Ronald Silverman, William Arbiter and Frank Hodi (d)..... 3-174

Silicon

- Ferrosilicon Manufacture at Marietta, by E. E. Thum..... 4-65
Processing and Purification of Silicon for Semiconductor Use, by D. K. Hartman and P. L. Ostapovich..... 4-100
Silicon Improves Ultra High-Strength Steels, by John Vajda, John J. Hauser and Cyril Wells (d)..... 3-196

Sintering

- Sintering Furnace Maintenance, by George Otto (d)..... 4-194

Slags

- Slag Control in Cupolas, by W. E. Clarke (d)..... 5-183

Smelting, electric furnace

- Electric Melting—Its Place in the Economic Scheme, reviewed by E. C. Wright (br)..... 2-110

Spectroscopy

- Rapid Chemical Analysis With the X-Ray Spectrograph, by A. M. Reith and E. D. Weisert..... 1-83

Spinning

- Sheet Metal Forming in England, by J. A. Grainger (d)..... 5-206

Stainless steel

- 16-8-2 Cr-Ni-Mo for Welding Electrode, by O. R. Carpenter and R. D. Wylie..... 5-65
Armo 17-7 PH Stainless—Design Strengths for Elevated Temperature (ds)..... 1-96B
Enhanced Properties in 17-7 Stainless, by M. W. Marshall, D. C. Perry and N. R. Harpster..... 1-94
Martensite Formation in Austenitic Stainless, by P. G. Bastien and J. M. B. Dedieu (d)..... 5-176
Microstructure of 18-8 Ti, by T. V. Simpkinson (d)..... 3-206
Precipitation Hardening of Cr-Mn Stainless Steels, by Chi-Mei Hsiao and E. J. Dulis (d)..... 3-236
Selection of Stainless Steel Electrodes for Trouble-Free Welds, by R. David Thomas, Jr..... 1-73
Stress-Corrosion of Stainless Boilers, by W. Lee Williams and John F. Eckel (d)..... 1-152
The Case of the Chloride Ions, by Marjorie R. Hyslop..... 5-90
Ti and B in Heat Resistant Steels, by J. Salvagni and L. A. Yerkovich (d)..... 3-234

Steel, alloy

- Automatic Submerged-Arc Welding of Alloy Steel, by R. A. Wilson..... 4-104
Hardenability of Alloy Steels, by H. J. French, O. O. Miller and J. W. Sands (d)..... 5-192
Heat Treatment of Welded Alloy Steels (ds)..... 2-96B
Weldability of Some Mn-Ni-Cr-Mo Steels, by C. L. M. Cottrell, B. J. Bradstreet and T. E. M. Jones (d)..... 5-212

Steel, cast

- Handbook of Foundry Practice, reviewed by Francis W. Boulger (br)..... 5-77

Steel, high-strength

- Die Steel Useful for Ultra High-Strength Structural Requirements, by John C. Hamaker, Jr..... 6-93
Evaluating Ultra High-Strength Steels, by J. C. Hamaker, Jr., V. C. Strang and G. A. Roberts (d)..... 3-220
Should High-Strength Parts Be Prestressed?, by R. E. Kemelhor (c)..... 2-112
Silicon Improves Ultra High-Strength Steels, by John Vajda, John J. Hauser and Cyril Wells (d)..... 3-196
Structural Engineering Properties of Hotform, a 5% Chromium Die Steel, by John C. Hamaker, Jr. and V. C. Strang (ds)..... 6-95B

Steel, leaded

- Impact Properties of Leaded Steels, by A. P. Weaver (d)..... 3-198

Steel, manganese

- Work Hardening High-Manganese Steel, by R. K. Buhr, S. E. Gertman and J. Reekie (d)..... 3-218

Steelmaking

- Desulfurization of Hot Metal, by C. A. Shanahan (d)..... 4-172
Use of Oxygen in Steelmaking, reviewed by E. C. Wright (br)..... 4-107

Steelmaking, bessemer

- Dephosphorization of Bessemer Steels, by Karl G. Speith and Hans vom Ende (d)..... 5-174
Production Control of Acid Bessemer, by P. J. Leroy, J. G. Galey and F. B. Cawley (d)..... 6-190

Steelmaking, electric

- Electric Melting—Its Place in the Economic Scheme, reviewed by E. C. Wright (br)..... 2-110
Electric Versus Openhearth, by J. E. Wilbanks..... 3-118
Snyder Furnace Still Operating, by Joseph H. Sander (c)..... 1-116

Steelmaking, openhearth

- Electric Versus Openhearth, by J. E. Wilbanks..... 3-118

Strain aging

- Effect of Temper Rolling on Strain Aging, by H. P. Tardif and C. S. Ball (d)..... 1-134

Stress analysis

- Precision Measurements of Force, by Arthur C. Hoge..... 1-92
Stress Analysis of Metal Forming Operations, by W. Johnson (d)..... 4-174

Stress-corrosion

- Stress-Corrosion of Aluminum Alloys, by F. A. Champion (d)..... 6-186
Stress-Corrosion of Stainless Boilers, by W. Lee Williams and John F. Eckel (d)..... 1-152
The Case of the Chloride Ions, by Marjorie R. Hyslop..... 5-90

Stretch forming

- Radial Draw Forming of Helicopter Components, by L. Favreau..... 4-88

Tempering

- Temperability of Steels, by L. D. Jaffee and Edward Gordon (d)..... 3-152

Tensile properties

- New Dynamic Test, by George Girard and Ralph Papirno (d)..... 3-192
Notch Strength of Tempered Martensite and Bainite, by H. Sachs, V. Weiss and E. F. Klier (d)..... 5-159
Tensile Properties of Metals at Low Temperatures, by E. T. Wessel (d)..... 3-238

Tin

- New Uses for Tin, by Herbert E. Hirschland (d)..... 6-156

Titanium

- Advantages of Alpha Versus Beta Titanium at High Temperatures, by John Lunsford and Nicholas J. Grant (d)..... 3-186
Air Contamination of Titanium Alloys, by J. E. Reynolds, H. R. Ogden and R. I. Jaffee (d)..... 3-169
Changes in Modulus With Alloying, by W. H. Graft, D. W. Levinson and W. Rostoker (d)..... 3-208
Effect of Sulphur in Titanium Alloys, by L. W. Berger, D. N. Williams and R. I. Jaffee (d)..... 3-224
Explosive Welds for Titanium Castings, by A. L. Feld, Jr..... 4-92
Explosion of Titanium and Fuming Nitric Acid Mixtures, by L. L. Gilbert and C. W. Funk..... 5-93
Induction Melting of Titanium, by Paul J. Ahern and Conrad F. Frey (c)..... 4-112
Only a Delay in Delayed Cracking, by Harold Bernstein (c)..... 2-112
Properties of MST 6Al-4V May Also Be Enhanced, by G. W. Haur (c)..... 4-116
Properties of Titanium Melted Under High Vacuum, by R. L. Folkman and M. Schussler..... 6-111
TTT-Curve for a Titanium Alloy, by A. W. Goldstein and W. Rostoker (d)..... 5-158

Toolsteel

- Die Steel Useful for Ultra High-Strength Structural Requirements, by John C. Hamaker, Jr..... 6-93
Evaluating Ultra High-Strength Steels, by J. C. Hamaker, Jr., V. C. Strang and G. A. Roberts (d)..... 3-220
Heat Treating Instructions for Toolsteel, by William F. Loehrer..... 6-115
Structural Engineering Properties of Hotform, a 5% Chromium Die Steel, by John C. Hamaker, Jr. and V. C. Strang (ds)..... 6-95B
Tool Life Increased With New Steel, by J. Y. Riedel..... 2-69
Wedge Specimens Reveal Hardness Penetration in Toolsteels, by A. J. Blackwell (d)..... 2-152

Toughness

- Notch Toughness of Ingot Iron, by J. C. Danko and R. D. Stout (d) 3-178
Toughness of Malleable at Low Temperatures, by G. A. Sandoz, N. C. Howells, H. F. Bishop and W. S. Pellini (d) 3-158

Transformations

- Transformation of U-Mo Alloys, by R. J. Van Thynne and D. J. McPherson (d) 3-212
Transformation of Uranium-Base Alloys, by R. J. Van Thynne and D. J. McPherson (d) 3-222
Transformation on Continuous Cooling, by D. J. Blickwede and R. C. Heaz (d) 3-172

Tumbling

- Better Barrel Finishing With Improved Abrasives, by William E. Brandt 1-88
Those Controversial Abrasive Mediums, by John F. Lange; D. W. Matteson; William E. Brandt (c) 5-114

Uranium

- Growth of Uranium During Thermal Cycling, by H. H. Chiswick (d) 3-242
Transformation of U-Mo Alloys, by R. J. Van Thynne and D. J. McPherson (d) 3-212
Transformation of Uranium-Base Alloys, by R. J. Van Thynne and D. J. McPherson (d) 3-222

- Uranium Separated by Gaseous Diffusion, by David K. Felbeck (c) 4-120

Vacuum techniques

- Properties of Titanium Melted Under High Vacuum, by R. L. Folkman and M. Schussler 6-111

War material

- Preservation of Stored War Material, by J. L. McCloud 6-84

Wear

- Crater Wear of Cutting Tools, by K. J. Trigger and B. T. Chao (d) 4-176
Gear Tooth Wear, by George Uberti (d) 2-182

Weld tests

- Spot Weld Failures Analyzed, by J. F. Rudy, R. B. McCauley and R. S. Green (d) 1-150

Weldability

- Weldability of Some Mn-Ni-Cr-Mo Steels, by C. L. M. Cottrell, R. J. Bradstreet and T. E. M. Jones (d) 5-212

Welding

- Blast Furnace Construction by Welding, by T. Birchall (d) 2-156
Welding Aluminum and Its Alloys, by W. I. Pumphrey (d) 2-132

Welding, arc

- Automatic Submerged-Arc Welding of Alloy Steel, by R. A. Wilson 4-104

Welding, electrodes

- 16-8-2 Cr-Ni-Mo for Welding Electrode, by O. R. Carpenter and R. D. Wylie 5-45
Selection of Stainless Steel Electrodes for Trouble-Free Welds, by R. David Thomas, Jr. 1-73

Welding, spot

- Spot Weld Failures Analyzed, by J. F. Rudy, R. B. McCauley and R. S. Green (d) 1-150

Welds

- Cracking in Mild Steel Welds, by N. Christensen and R. Rose (d) 3-142
Heat Treatment of Welded Alloy Steels (ds) 2-96B

Whiskers

- Metal Whiskers, by G. W. Sears and S. S. Brenner 5-85

Wire

- Continuous Plating in Tandem Tanks, by A. N. Gray and G. E. Murray (d) 4-142

Work hardening

- Work Hardening High-Manganese Steel, by R. K. Buhr, S. E. Gertman and J. Reekie (d) 3-218

X-ray technique

- A Simple Semi-Micro X-Ray Technique, by M. J. Fraser and A. A. Burr (c) 5-114
Structural Analysis of Ball Bearing Steels, by Donald P. Koistinen (d) 5-150

Author Index

- Adamec, John B. 6-101
Aberny, Paul J. (c) 4-112
Anderson, E. A. (d) 5-190
Arbiter, William (d) 3-174
Arkhov, V. I. (d) 4-152
Asanov, A. D. (d) 6-144
Atterton, D. V. (d) 1-134
Bakish, Robert (c) 5-128
Ball, C. S. (d) 1-134
Barrett, Charles S. 6-58
Bastien, P. G. (d) 5-176
Baur, G. W. (c) 4-116
Beattie, H. J., Jr. (d) 3-228, 3-254
Berger, L. W. (d) 3-224
Bernstein, Harold (c) 2-112
Birch, N. A. 5-106
Birchall, T. (d) 2-156
Bishop, H. F. (d) 3-158
Blackwell, A. J. (d) 2-152
Blanter, M. E. (d) 5-180
Blickwede, D. J. (d) 3-172
Boegehold, A. L. 3-103, 4-73
Bonebrake, H. P. 2-105
Boulin, John H. (d) 6-190
Boulger, F. W. (d) 2-174, 5-77
Bradstreet, B. J. (d) 5-212
Brandt, William E. (c) 1-88, 5-114
Breen, J. E. (d) 3-190
Brenner, S. S. 5-85
Brune, F. G. 6-89
Buehler, W. J. 6-107
Buhr, R. K. (d) 3-218
Bungeroth, Adolph (d) 6-180
Burr, A. A. (c) 5-114
Carb, D. (ds) 2-89
Carpenter, O. R. 5-45
Cawley, F. R. (d) 6-190
Champion, F. A. (d) 6-186
Chao, B. T. (d) 4-176
Chatterjee, B. (d) 6-172
Cheney, W. S. (c) 3-133
Chiswick, H. H. (d) 3-242
Chopin, Robert (d) 2-172
Christensen, N. (d) 2-142
Clark, W. L. (d) 2-140
Clarke, W. E. (d) 5-188
Clough, W. R. (d) 3-204
Colwell, Donald L. (br) 6-77
Cottrell, C. L. M. (d) 5-212
Cox, J. J. (d) 3-180
Cremer, George D. 5-81
Cummings, H. N. (d) 3-152
Daasch, F. J. (d) 6-154
Danko, J. C. (d) 3-178
Dawson, J. V. (d) 4-180
Doboskey, W. (ds) 4-96B
Dedieu, J. M. B. (d) 5-176
Dennison, J. P. (d) 5-160
Dewhurst, E. V. (c) 3-133
Dorey, S. F. (d) 1-138
Dorn, J. E. (d) 3-211
Dulak, E. J. (d) 3-236
Eckel, John F. (d) 1-152
Efremova, K. A. (d) 4-152
Ellwood, E. C. (d) 6-146
Favreau, L. 4-88
Feild, A. L. Jr. 4-92
Felbeck, David K. (c) 4-120
Fiedling, J. (d) 2-184
Folkman, R. L. 6-111
Forscher, F. (ds) 4-96B, (c) 5-124
Frary, Francis C. 3-128
Fraser, M. J. (c) 5-114
Frazier, R. H. (d) 2-174
French, H. J. (d) 5-192
Frey, Conrad F. (c) 4-112
Freynik, H. S. (d) 6-184
Frye, John H., Jr. 3-92
Funk, C. W. 5-93
Galey, J. G. (d) 6-190
Galloway, D. F. (d) 2-144
Garofalo, F. (d) 3-188
Gertman, S. E. (d) 3-218
Ghosh, P. C. (d) 6-172
Gilbert, L. L. 5-93
Girard, George (d) 3-192
Goetz, Claus G. 6-101
Gohn, G. R. (d) 4-140, (d) 6-184
Goldstein, A. W. (d) 5-158
Gordon, Edward (d) 3-152
Graft, W. H. (d) 3-208
Grainger, J. A. (d) 5-206
Grant, Nicholas J. 3-113, (d) 3-186
Gray, A. N. (d) 4-142
Green, R. S. (d) 1-150
Gregg, James L. 3-92
Guard, R. W. (d) 3-258
Guerrand, J. P. (d) 6-184
Haddrell, V. J. (d) 4-148
Haezel, W. C. (d) 3-254
Hall, R. C. 2-78
Hamaker, J. C., Jr. (d) 3-220, 6-93, (ds) 6-96B
Harmon, Robert A. (d) 6-190
Harpster, N. R. 1-94
Hartman, D. K. 4-100
Harwood, Julius J. 6-97
Hastings, C. H. (c) 1-110
Hauser, John J. (d) 3-196
Havekotte, W. L. (c) 2-112
Hayes, Earl T. 2-86
Hehemann, R. F. 2-97, (d) 3-196
Hengenuel, J. (d) 4-160
Herzig, Alvin J. 1-103
Hess, R. C. (d) 3-172
Hirschland, Herbert E. (d) 6-156
Hirst, B. 1-77
Hoar, T. P. (d) 1-134
Hodi, Frank (d) 3-174
Hopkins, L. M. T. (d) 2-170
Horne, G. T. (d) 3-180
Houseman, D. H. (d) 1-134
Howard, Darnley M. (d) 2-178
Howells, N. C. (d) 3-158
Hsiao, Chi-Mei (d) 3-236
Huebler, J. 6-78
Hynlop, Marjorie R. 5-90
Ihriz, Harry K. (d) 5-154
Ipsen, H. N. 2-107
Iunikov, B. A. (d) 4-152
Ivanovskaya, S. I. (d) 4-152
Jaffee, I. D. (d) 3-152
Jaffee, R. I. (d) 3-160, 3-200, 3-224
Johnson, W. (d) 4-174
Johnson, William R. (c) 1-122
Jones, T. E. M. (d) 5-212
Justusson, W. (d) 3-182
Kemethor, R. E. (c) 3-112
Kennedy, W. B. (d) 5-270
Klement, J. F. 5-106
Klier, E. P. (d) 5-150
Koistinen, Donald P. (d) 5-150
Krihl, F. M. 1-81
Krishtal, M. A. (d) 5-182
Lamb, A. D. (d) 6-174
Lane, Joseph R. (d) 3-190
Lange, John F. (c) 5-114
Lankin, P. A. (d) 6-144
Leak, G. M. (d) 2-148
Leroy, P. J. (d) 6-190
Levinson, D. W. (d) 3-208
Lindsay, R. W. (br) 1-91
Lochner, William P. 6-115
Long, J. V. (d) 6-150
Loria, C. H. (d) 2-174
Love, P. P. (d) 1-146
Ludington, E. N. 2-93
Luhano, V. (d) 3-196
Lunsford, John (d) 3-186
Lyle, J. P., Jr. (d) 6-158
Malinkina, E. I. (d) 6-170
Marsden, D. C. (d) 3-188
Marshall, M. W. 1-94
Matteson, D. W. (c) 5-114
Maykuth, D. J. (d) 3-200
McCabe, J. L. 1-77
McCauley, R. B. (d) 1-150
McCloud, J. L. 6-84
McEnally, V. L., Jr. 6-89
McGonaghy, W. J. 4-97
McLean, D. (d) 1-156
McPherson, D. J. (d) 3-212, 3-222
Mehl, R. F. (d) 3-180
Miller, O. O. (d) 5-192
Moran, E. R. (d) 3-182
Mott, B. W. (d) 4-148
Mott, N. F. (d) 4-188
Murray, G. E. (d) 4-142
Nachman, J. F. 6-107
Nes, M. G. (c) 4-112
Norris, Frank G. (c) 1-112
O'Brien, A. O. (c) 6-118
Ogden, H. R. (d) 3-160
Ostapovich, P. L. 4-100
Otto, George (d) 4-194
Papirno, Ralph (d) 3-192
Pavesic, E. J. 4-83
Peele, W. S. (d) 3-158
Peltzer, Otto (d) 1-142
Perry, D. C. 1-94
Phelps, E. F. (d) 6-146
Pidzeon, L. M. 2-81, 4-79, 5-75
Pocock, Walter E. 4-75, 5-97, (d) 5-96B
Portevin, Albert (c) 6-120
Prater, T. A. (d) 3-258
Prytherch, J. C. (d) 6-146
Pumphrey, W. I. (d) 2-132
Quarrell, A. G. (d) 2-136
Quares, T. S. (c) 6-118
Reekie, J. (d) 3-218
Reith, A. M. 1-83
Renhack, E. H. (d) 5-190
Reynolds, J. E. (d) 3-160
Riedel, J. Y. 2-69
Roberts, G. A. (d) 3-220
Rose, R. (d) 2-142
Rose, Robert S. (c) 2-112
Rostoker, W. (d) 3-208, 5-158
Rudy, J. F. (d) 1-150
Ruse, Arthur C. 1-92
Sachs, H. (d) 5-150
Salvaggi, J. (d) 3-234
Samana, C. H. (d) 3-244
Samuel, P. (d) 3-136
Sander, Joseph H. (c) 1-110
Sandoz, G. A. (d) 3-158
Sandoz, J. W. (d) 5-192
Schenck, H. (d) 2-158
Schmidtman, E. (d) 2-158
Schulte, W. C. (d) 3-152
Schussler, M. 6-111
Schwalm, D. J. 1-99
Sears, G. W. 5-85
Shahinian, Paul (d) 3-252
Shanahan, C. A. (d) 3-204
Shank, M. E. (d) 3-204
Shaw, M. C. (d) 5-154
Shepelevskii, K. Z. (d) 6-144
Sherby, O. D. (d) 3-211
Shtol's, A. K. (d) 4-152
Silverman, Ronald (d) 3-174
Simcoe, C. R. 2-72
Simkinson, T. V. (d) 3-206
Sinnott, R. T. 4-83
Smith, A. J. (c) 3-133
Smith, Frank C. (d) 2-178
Smith, G. V. (d) 3-188
Smith, Ira (d) 2-178
Smith, Karl F. 5-110
Smith, P. A. (d) 4-154
Speith, Karl G. (d) 5-174, (d) 6-180
Storchheim, Samuel 3-120
Stout, R. D. (d) 3-178
Strang, V. C. (d) 3-220, (ds) 6-96B
Strasser, Federico (d) 2-132
Stulen, F. B. (d) 3-152
Sykes, E. C. (d) 4-148
Tardif, H. P. (d) 1-134
Terandy, J. (c) 6-116
Thomas, R. David, Jr. 1-73
Thum, E. F. (cp) 2-65, 4-65, (cp) 4-108
Timchenko, N. A. (d) 5-204
Tisnari, G. F. (d) 3-244, (c) 4-120
Torrey, M. N. (d) 4-140
Treat, S. Becker (d) 2-134
Trigger, K. J. (d) 4-176
Troiano, A. R. 2-97, (d) 3-196
Troscer, T. A. (d) 3-211
Tyrrell, John F. 3-110
Uberti, George (d) 2-182
Uzhik, G. V. (d) 6-178
Vajda, John (d) 3-196
Van Thynne, R. J. (d) 3-212, 3-222
VerSnyder, F. L. (d) 3-228
von Ende, Hans (d) 5-174
Warrat, Joseph J. 5-78
Weaver, A. P. (d) 3-198
Weiser, E. D. 1-83
Weiss, V. (d) 5-150
Wells, Cyril (d) 3-196
Wessel, E. T. (d) 3-238
Whetzel, J. C., Jr. 6-73
White, C. M. 5-102
Wilbanks, J. E. (d) 3-118
Williams, D. N. (d) 3-224
Williams, W. Lee (d) 1-152
Wilson, R. A. 4-104
Wright, E. C. (br) 2-110, 3-97, (br) 4-107
Wylie, Charles 6-73
Wylie, R. D. 5-45
Yerkovich, I. A. (d) 3-234
Zackay, V. T. (d) 3-182
Ziegler, S. T. (c) 6-116
Zima, G. E. (d) 3-214